

PHILOSOPHICAL TRANSACTIONS.

Munday, March 12. 166 $\frac{1}{2}$.

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*Observations continued upon the Barometer, or rather Ballance of
the Air.*



These *Transactions* being intended, *not only* to be (by parcels) brief Records of the Emergent Works and Productions in the Universe; Of the Mysteries of Nature of later discoveries; And, of the growth of Useful Inventions and Arts; *but also*, and chiefly, to sollicite in all parts mutuall Aids and Collegiate endeavours for the farther advancement thereof: We shall begin this *Second* year of our Publications in this kind (in which, for 3-moneths the Printing-presses were interrupted by the publick Calamity) with a few more particular Observations upon the *Ballance of the Air*, as they are most happily invented and directed by Mr. Boyle; and deserve to be prosecuted with care and diligence in all places.

But it is to be premised, that that Worthy person, who was alledged as the Author of the Observations, delivered of this kind in the last of these *Traacts* (Dr. Beale) gives notice, That

he did not pretend to exactness, but only to excite the carefulness of others in the several distant places, and chiefly such, as can have the assistance of a *Wheel-balance* perfectly filled: without both which aids he hopes not to obtain all the benefits and mysteries of this Invention.

This being thus briefly intimated, the Account of the Observations themselves, as they were extracted out of a late Letter of the same Person, are, as followes:

1. As I have fitted and filled the *Single Cane*, I can say in the general, That I have not yet found any such infallible Prognostick of these changes of weather, which do follow a long serenity, or settled weather. And perchance in brighter Climats it may be constantly infallible. In these *Northern Islands*, the Clouds are so short, and narrow, and by fickle changes are sometimes emptied upon us, sometimes so neer, as may make so little variation in the weight of the whole Atmosphere of Air, as may sometimes deceive us, or smother and hide from us the causes of fixedness, or of changes. I wish I could see a good *Calendar* or *Journal* taken in *Tangier*, and in some of our *Northern* and most *Southern* parts of *America*. I have store of *Hygrosopes*

Hygrosopes are Instruments, of divers kinds, and I do remark to discover the degrees of Moisture and Drought of the Air. them, and the sweatings of Marble, and as many other famed Prognosticks, as I can hear off; but can find

nothing so neerly indicative of the change of weather, as this *Balance*. Those others are often changed by Dews, which do not at all alter the *Balance*, nor alter the state of the weather: And the open Weather-glass is known to signifie nothing at certainty, having a double obedience to two Masters, sometimes to the *Weight of the Air*, sometimes to *Heat*, as the service is commanded.

2. And in further confirmation of this Note, I may adde to the former, That in *January* last 166 $\frac{1}{2}$, from the *fourth*, and more especially from the *seventh* day, for many daies it continued very dark, so that all men expected daily great rain; yet the *Mercury* held very high, neer to the greatest height: And though in those daies sometimes thick mists arose, and some small rain fell, yet the *Quick-silver* held at a great height: which did indicate to me, there could then be no great change of weather. As the small rain fell, it yeilded somewhat, not much; and that does more

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confirm the indication. And more lately, in very dark daies, I had the same confidence upon the same ground, and I was not disappointed.

3. Again, if the *Mercury* ascends to a good height after the fall of rain (as sometimes, but less often it does) then I look for a settled serenity; but if it proceeds after rain in a descending motion, then I expect a continuance of broken and showry weather. But in all, as I only say, *For the most part*, so I dare not positively declare it an affirmative result, but do refer it to the remarks of others. And this may explicate the Notes 6. and 14. of Num. 9. into more clearness.

4. That we find the Weather and our Bodies more chill, cold, and drooping, when the *Mercury* is lowest, and the Air lightest, besides other causes, I guess, That as Air is to us the breath of life, as water is to Fishes; so, when we are deprived of the usual measure of this our food, 'tis the same to us, as when the water is drawn ebb from Fishes. But I would much rather be instructed by others, than offer much in this kind.

5. The lowest descent of the *Mercury* in all the time, since I have observed it, was Octob. 26. 1665. in the Evening, when it was very near at $27\frac{1}{2}$ Inches. Which I find thus circumstanced with the weather in my notes.

Inch.

Oct. 25. Morning; *Mercury* at $28\frac{1}{2}$. Great storms and much rain.

Oct. 26. Morning; *Merc.* at 28. winds quiet, thick dark clouds.

Oct. 26. Evening; *Merc.* at $27\frac{1}{2}$. That day, and some daies following, the weather was variable, frequent rain, and as you see, the *Mercury* lower, than usual.

6. Over the place, where this *Mercurial Cane* stands, I have set a *Wind. vane*, with purpose of exactness, of a Streamer in Brass so large, and pointing to a Board indented in the Margin, that I can at a sure Level upon the *Vane*, take every of the 32. points of the Wind, half points, and quarter points, at good distance. Otherwise we may find our guesses much deceived, as the best guessers, upon trial, do acknowledge. And this exactness may become the *Wheel-balance*, which shews the minutest variations almost beyond imagination. And thus any servant, at the approach of a thick Cloud, or other *Meteor*, higher or lower, or at the rising of a storm or fresh wind in the night, or day, may bring a report of the Weight of the Air, as certainly and almost as

easily, as of the Sun from the *Dial* in a Sunshine. It were good to have an *Index* of Winds, that discover'd as well their Ascent and Descent, as their Side-coastings.

A Relation concerning the late Earthquake near Oxford; together with some Observations of the sealed Weatherglass, and the Barometer both upon that Phænomenon, and in General.

This Relation was communicated by the excellently learned Dr. Wallis, as follows:

On the 19. of January 1665. *Stylo Angliæ* (or Jan. 29. 1666. *stylo novo*) at divers places near *Oxford*, was observed a small Earthquake (as at *Blechington, Stanton-St. Johns, Brill, &c.*) towards evening. In *Oxford* it self, I doe not hear, that it was observ'd to be an Earthquake; yet I remember about that time (whether precisely then or not, I cannot say) I took notice of some kind of odde shaking or heaving, I observed in my study, but did impute it to the going of Carts or Coaches, supposed to be not far off; though, yet I did take notice of it, as a little differing from what is usual on such occasions; (and wondered the more, that I did not hear any:) But not knowing, what else to refer it to, I thought no more of it. And the like account I have had from some others in *Oxford*, who yet did not think of an Earthquake; it being a rare thing with us. Hearing afterwards of an Earthquake observed by others; I looked on my Notes concerning my *Thermoscope* and *Baroscope*, to see if any alteration considerable had then happened.

My *Thermoscope* consists of a round large Glass, containing about half a pint or more; from whence issues a long Cylindrical neck of Glass, about two foot and a half in length, and less than a quarter of an inch diameter; which neck was *hermetically* sealed at the top, to exclude communication with the External Air; but before the sealing of it, the whole Glass was filled with *spirit of Wine* (tinged with *Cochineel*, to make it the more discernable to the Eye) so warmed, that it filled the whole content of the Glass; but afterwards, as it cooled, did so subside, as to leave a void space in the upper part of the Neck. Which Instrument, so prepared, doth by the rising or falling of the tinged liquor in the neck (consequent upon the expanding or contracting of the whole liquor contained in it and the Ball below) give a very nice account of the Temperature of the Air,